

WO 00/41128

- 12 -

PCT/IL00/00010

## CLAIMS:

1. A method for processing an acquired text image obtained by scanning a text with a scanner, the text having one or more fonts, each font having a font ratio, each location in the text having been scanned at an instantaneous scanning speed, where the text image is distorted due variability of the instantaneous scanning speed, the method comprising the following steps:
  - (a) providing a mode character height for each font; and
  - (b) utilizing said mode character height and font ratio for constructing a correction factor in order to correct the distorted text image.
2. The method of Claim 1 for determining the instantaneous correction factor at one or more essentially vertical stacks in an acquired text image, the essentially vertical stacks having widths, wherein said step (b) further includes utilizing the widths of one or more essentially vertical stacks in the acquired text image.
3. A method according to Claim 2 comprising the steps of:
  - (a) determining the mode character height of the scanned text;
  - (b) calculating a reference line width by dividing the mode character height by the font ratio;
  - (c) determining the height and width of the one or more essentially vertical stacks;
  - (d) calculating an instantaneous correction factor for any one of the one or more essentially vertical stacks by dividing the reference width by the width of the essentially vertical stack to obtain the instantaneous correction factor at the essentially vertical stack; and

WO 00/41128

PCT/IL00/00010

- 13 -

- (e) setting the correction factor equal to one when the correction factor calculated according to step (d) is greater than one.
4. The method of Claim 3, further comprising the steps of:
- (a) partitioning one or more stop segments into a predetermined number of subsegments of consecutive fields of view; and
- (b) deleting from each subsegment at least one, but not all, of the fields of view in the subsegment.
5. The method of Claim 4 further comprising the step of calculating an instantaneous correction factor in one or more stop segments wherein the instantaneous correction factor in a stop segment is a predetermined value.
6. A method for calculating an instantaneous correction factor at a location in an acquired text image not comprising an essentially vertical stack and not comprising a a stop segment that has been corrected according to the method of Claim 5, wherein the method comprises either:
- (a) identifying essentially vertical stacks flanking the location on different sides; calculating the instantaneous correction factor at each one of the two essentially vertical stacks by the method of claim 2 or 3, and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the essentially vertical stacks;
- (b) identifying a subsegment in each of two stop segments flanking the location on different sides, calculating the instantaneous correction factor at each one of the two subsegments by the method of Claim 5, and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the subsegments; or
- (c) identifying an essentially vertical stack and a subsegment of a stop segment flanking the location on different sides, calculating the instantaneous correction factor at the essentially vertical stack by the method of Claim 2 or 3, calculating the instantaneous correction

09-01-2001

PCT/100/00010

PCT/100/00010

WO 00/41128

- 14 -

PCT/100/00010

factor at the subsegment by the method of Claim 5 and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the essentially vertical stack and the stop segment.

7. A method for removing distortions at one or more locations in an acquired text image due to variation in the scanning speed during scanning of a text, the method comprising the steps of:

- (a) calculating the instantaneous correction factor at the one or more locations in the text image by the method of any one of Claims 1 to 6 and
- (b) deleting fields of view at each of the one or more locations where the correction factor is less than one so as to produce a rescaling of the acquired text image at each location by a factor substantially equal to the instantaneous correction factor at each location.

8. The method of Claim 7 further comprising the step of processing the text image by character recognition software.

9. A system for processing a text comprising:

- (a) a scanner having a one-dimensional optical sensor and no mechanical parts for determining scanning speed; and
- (b) a CPU coupled to a storage medium and executing software for carrying out the method according to any one of Claims 1 to 8.

10. A storage medium storing an executable computer program for processing an acquired text image obtained by scanning a text with a scanner, the text having one or more fonts, each font having a font ratio, each location in the text having been scanned at an instantaneous scanning speed, where the text image is distorted due to variability of the instantaneous scanning speed, the processing comprising the following steps:

Printed 30-01-2001

AMENDED SHEET

09-CAT-2001

PCT/TL00/00010

CHVS

WO 00/41128

PCT/TL00/00010

- 15 -

- (a) providing a mode character height for each font; and
- (b) utilizing said mode character height and font ratio for constructing a correction factor in order to correct the distorted text image.

11. The storage medium of Claim 10 storing an executable computer program for determining the instantaneous correction factor at one or more essentially vertical stacks in an acquired text image, the essentially vertical stacks having widths, wherein said step (b) further includes utilizing the widths of one or more essentially vertical stacks in the acquired text image.

12. The storage medium according to Claim 11 wherein the processing comprises the steps of:

- (a) determining the mode character height of the scanned text;
- (b) calculating a reference line width by dividing the mode character height by the font ratio;
- (c) determining the height and width of the one or more essentially vertical stacks;
- (d) calculating an instantaneous correction factor for any one of the one or more essentially vertical stacks by dividing the reference width by the width of the essentially vertical stack to obtain the instantaneous correction factor at the essentially vertical stack.

13. The storage medium of Claim 12, wherein the processing further comprising the steps of:

- (a) partitioning one or more stop segments into a predetermined number of subsegments of consecutive fields of view; and
- (b) deleting from each subsegment at least one, but not all, of the fields of view in the subsegment.

14. The storage medium of Claim 13 wherein the processing further comprises calculating an instantaneous correction factor in one or more stop segments wherein the instantaneous correction factor for a stop segment is a predetermined value.

PCT/TL00/00010

09-07-2001

EPA/DO-0001

01/13

WO 00/41128

PCT/IL00/00010

- 16 -

15. The storage medium of Claim 14 wherein the processing further comprises calculating an instantaneous correction factor at a location in an acquired text image not comprising an essentially vertical stack and not comprising a subsegment of a stop segment that has been corrected according to the method of Claim 5, wherein the processing comprises either:

- (a) identifying essentially vertical stacks flanking the location on different sides; calculating the instantaneous correction factor at each one of the two essentially vertical stacks by the method of Claim 2 or 3, and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the essentially vertical stacks;
- (b) identifying a subsegment in each of two stop segments flanking the location on different sides, calculating the instantaneous correction factor at each one of the two subsegments by the method of Claim 5, and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the subsegments; or
- (c) identifying an essentially vertical stack and a subsegment of a stop segment flanking the location on different sides, calculating the instantaneous correction factor at the essentially vertical stack by the method of Claim 2 or 3, calculating the instantaneous correction factor at the subsegment by the method of Claim 6, and calculating the instantaneous correction factor at said location by interpolation of the instantaneous correction factors of the essentially vertical stack and the stop segment.

16. A storage medium storing an executable computer program for processing an acquired text image to remove distortions at one or more locations in the acquired text image due to variation in the scanning speed during scanning of a text, the processing comprising the steps of:

Printed 30-07-2001

AMENDED SHEET

5

WO 00/41128

PCT/IL00/00010

- 17 -

- (a) calculating the instantaneous correction factor at the one or more locations in the text image by the method of any one of Claims 1 to 6; and
- (b) deleting fields of view at each of the one or more locations where the correction factor is less than one so as to produce a rescaling of the acquired text image at each location by a factor substantially equal to the instantaneous correction field at each location.

17. The storage medium of Claim 16 for processing the text image by character recognition software.